



MAR COR[®]
PURIFICATION

A Cantel Medical Company

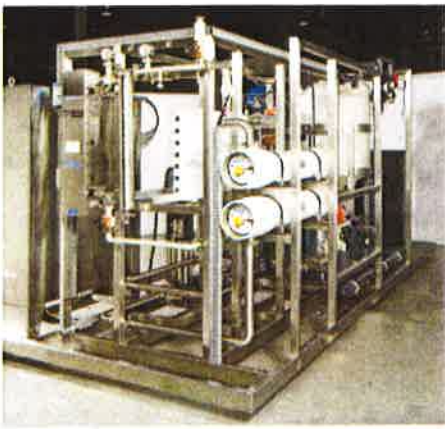
USP Pure

High Purity, Single Skid Water Treatment System



Assured Performance
Assured Delivery Schedule
Assured Quality
Assured Validation Process
Assured Compliance with Regulations

USPure Single Skid



Validation Documentation

As part of the standard offering, each system includes a comprehensive documentation package for validation support. Standard documents include the following:

- > Detailed Operation & Maintenance Manual with as built Drawings
- > (URS) User Requirements Specifications
- > (FRS) Functional Requirement Specifications
- > (SDS) Software Design Specifications
- > (FAT) Factory Acceptance Test Report. Non witnessed, No media in pretreatment
- > Material & Instrument Certificates (final product water only)
- > Boroscoping Report on 10% of welds (final product water only)

Applications

The standard single skid approach is applicable to many markets and applications. The systems are designed for USP applications, using sanitary components, but in non-sanitary applications less expensive components can be substituted without compromising the product quality or operational reliability. Some related applications are:

- > USP Purified Water
- > Highly Purified Water
- > Biotechnology
- > Cosmetics
- > Medical Device Manufacturing
- > Central Lab Systems
- > Beverage
- > Hospital Central Systems
- > Ophthalmics

The Mar Cor Purification USPure system is a standard single skid design that includes pretreatment, Reverse Osmosis (RO) & Electrodeionization (EDI) on one integrated skid for fast installation & startup. The validatable system offers a pre-designed space saving layout that is cost effective and assures the reliable production of USP grades of water.

The complete system provides for sanitary piping & instrumentation from the RO through to the EDI outlet. The entire system is controlled by a PLC based control system. Two

designs are available for sanitization either hot water or chemical.

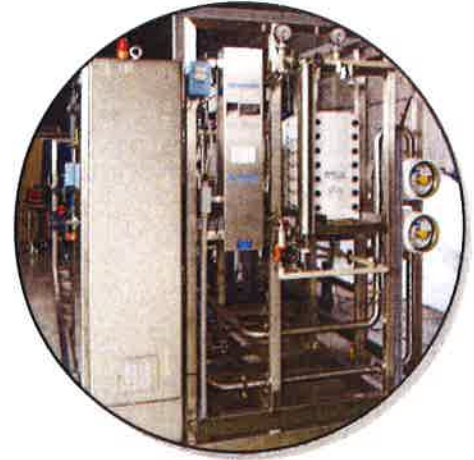
Each system is manufactured under strict Quality Control procedures conforming to ISO 9001:2000. To assure the system is ready for fast startup in your facility, each system is wet factory acceptance tested (FAT) prior to shipment.

USPure systems are backed by one of the largest and most experienced service networks in North America. We offer 24/7 service support with a fleet of stocked service vehicles.

Softeners with top mounted valve



Easy access to equipment



NEMA 4X control panel



Extensive service network



High Quality Water Systems

System Specifications

Model Number	2.5 C	6 C	10 C	15 C	20 C	2.5 H	6 H	10 H	15 H	20 H
Design Type	Chemical Sanitization					Hot Water Sanitization				
Design Parameters										
Product Flow @ 25°C GPM (LPM)	2.5 (9.5)	6 (23)	10 (38)	15 (57)	20 (76)	2.5 (9.5)	6 (23)	10 (38)	15 (57)	20 (76)
Max Feed Flow* GPM (LPM)	8 (30)	14 (53)	20 (76)	31 (117)	38 (144)	8 (30)	14 (53)	20 (76)	31 (117)	38 (144)
Operating Temp	50-80°F (10-27°C)					50-80°F (10-27°C)				
System Recovery	75%					75%				
Feed Pressure	40-80 PSI (2.6-5.5 Bar)					40-80 PSI (2.6-5.5 Bar)				
Membrane 40"	(3) 4"	(6) 4"	(3) 8"	(4) 8"	(4) 8"	(2) 4"	(4) 4"	(3) 8"	(4) 8"	(4) 8"
Electrical Load KW	10	10	20	20	20	30	30	40	40	40
Sanitization	Chemical					80°C hot water or chemical				
Dimensions Inch (CM)										
L x D x H	212 x 84 x 95 (538 x 213 x 241)					212 x 84 x 95 (538 x 213 x 241)				
Brine Tank (off Skid)	24 x 41 - (61 x 104)					24 x 41 - (61 x 104)				
Operating Weight LBS (KG)	2200 (998)	2600 (1179)	3500 (1588)	3700 (1678)	4000 (1814)	2500 (1134)	2800 (1270)	3700 (1678)	3900 (1769)	4200 (1905)
Piping Materials										
Pre-Treatment	PVC					PVC				
Reverse Osmosis Unit	316L SS, Polypropylene IR					316L SS				
Electrodeionization	Polypropylene IR					316L SS				
Connections										
Feed Water	1"	1"	2"	2"	2"	1"	1"	2"	2"	2"
Product Water TC	0.5"	0.75"	1"	1"	1.5"	0.5"	0.75"	1"	1"	1.5"
Waste Water -Flanged	2"	2"	3"	3"	3"	2"	2"	3"	3"	3"
Compressed Air 3/8" NPT	90/140 psi (6 - 9 Bar)					90/140 psi (6 - 9 Bar)				
Electrical	460V/3-ph/60Hz					460V/3-ph/60Hz				

* Flowrate is higher with optional multimedia filter.

Panel and Control Specification	
Categories	Specifications
Control Description	<ul style="list-style-type: none"> - Allen Bradley Controls - AB Micrologix 1500 PLC - AB Panelview 1000 Color Touchscreen - Ethernet Module for SCADA communication - Nema 4X Stainless Steel Control Panel
Panel Approvals	CSA • CUL • UL
HMI (Panelview) Programming	<ul style="list-style-type: none"> - Graphics in P&ID format - Individual screen per process pretreatment, RO, EDI... - Four levels of security - Alarm history; time and date stamped - Alarm classified as either an alert or critical

Options	
Categories	Options
Pretreatment	<ul style="list-style-type: none"> - Multimedia Filter System - Bisulfite Injection System - NaOH Injection System - Exchange Carbon
Process	<ul style="list-style-type: none"> - 10 Micron Prefilter - Pretreatment UV Sterilizer - Final Sanitary UV Sterilizer - 0.1 Micron Final Filter - 0.05 Micron Final Filter
Monitoring	<ul style="list-style-type: none"> - TOC Monitor - Hardness Monitor - Chart Recorder

Typical Treated Water Quality*		
	Standard USP Pure Meets current USP standards for Purified Water	USP Pure with 0.05 UF Option Meets req. for Highly Purified Water
Conductivity	<0.2 µS/cm	<0.2 µS/cm
TOC	<250 ppb	<250 ppb
Bacteria	<10 cfu/ml	<10 cfu/ml
Endotoxins	N/A	<0.25 EU/ml

* Treated Water Quality is dependent on feed water quality and flow rate.

USP Standards for Water Purity		
	USP Purified	USP WFI
pH	5.0 - 7.0	5.0 - 7.0
Conductivity*	1.3 µS/cm	1.3 µS/cm
TOC	500 ppb	500 ppb
Bacteria	100 cfu/ml	10 (cfu/100mL)
FDA Action Limit	100 cfu/ml	10 (cfu/100mL)
Endotoxins	N/A	0.25 EU/ml

* Please refer to USP, article 645, Water Conductivity for specific stage 1, 2 and 3.

System Feed Water Requirements*	
Categories	Specifications
Feed Water Source	Potable
Maximum Silt Density Index	< 3
Maximum Free Chlorine	< 3 ppm
Operating Temperature	50-80°F (10-27°C)
Operating pH Range	3-10
Total Dissolved Solids	< 600 ppm
Iron / Manganese	< 0.1 ppm

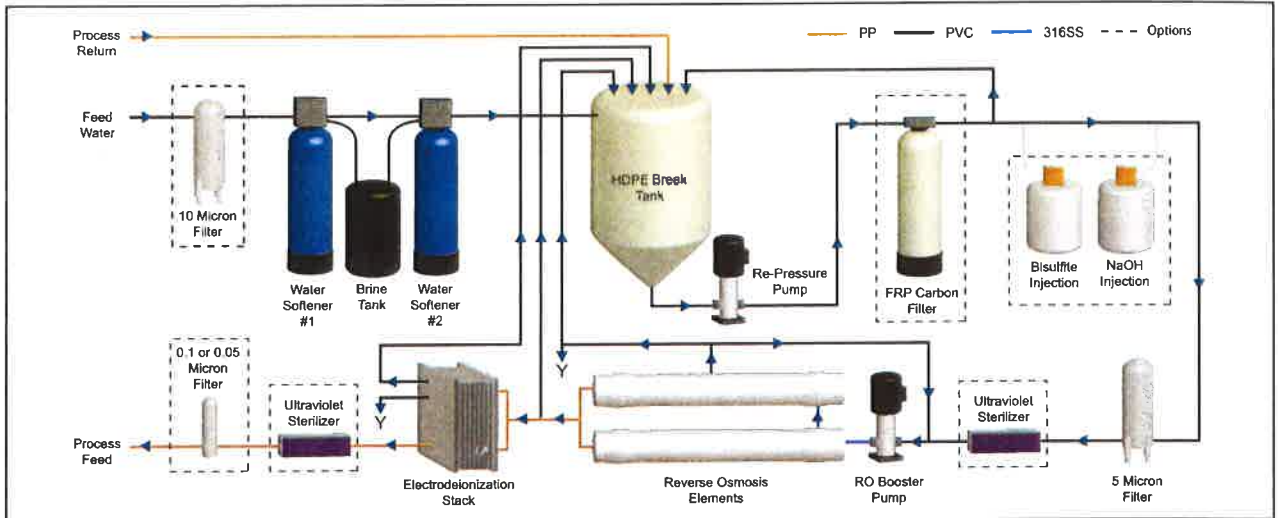
* Feedwater analysis required for final design



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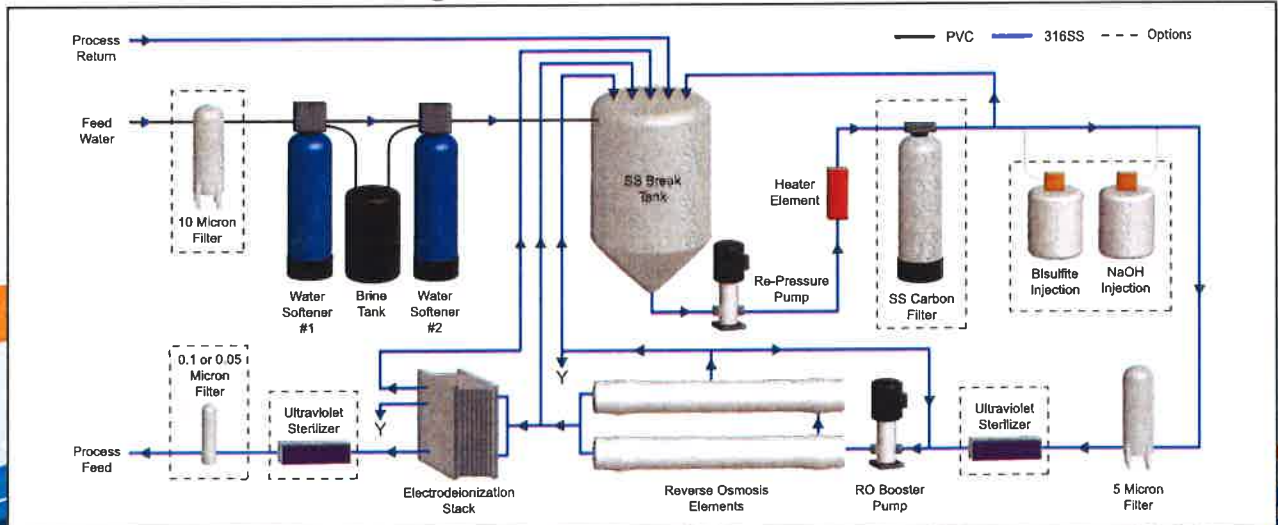
Chemical Sanitizable Design



The chemical sanitization skid is a design that utilizes a chemical disinfection procedure using a disinfectant like Minncare. The system includes a stainless steel skid, duplex softeners, a choice between bisulfite injection or carbon filtration for chlorine removal and a HDPE break tank. The RO elements are

TFC full fit design. The RO permeate, EDI feed and product are piped in IR welded polypropylene. The system has options for other unit operations such as UV lights and final filtration, that can be added. The entire disinfection process is a semi-automatic process initiated by the operator.

Hot Water Sanitizable Design



The hot water sanitization skid is a design that utilizes a skid produced 80°C water to disinfect the RO & EDI components. The system includes a stainless steel skid, duplex softeners, a choice between bisulfite injection or carbon filtration for chlorine removal, a stainless steel break tank, and an in-line electric heat exchanger.

The RO elements are TFC hot water sanitizable. The RO permeate, EDI feed and product are piped in sanitary 316L stainless steel. The system has options for other unit operations such as UV lights and final filtration, that can be added. The entire disinfection process is fully automated or it can be initiated by the operator.

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